Safety in Numbers
Using Statistics to Make the Transportation System Safer

Research Project #7

Expand the Collection of
"Near-Miss" Data to All Modes

Collection of "Near-Miss" Data

Background

- Definition
  - A situation that could have resulted in accidental harm or damage but failed to in the absence of any specific measure designed to prevent it.
- - "Near-Miss" vs. "Unsafe Situation"

Collection of “Near-Miss” Data

Benefits of Unsafe Situation Reporting

- Injury Prevention
- In-depth quantitative analysis
- Stronger safety efforts
- Cost-efficiency

Collection of “Near-Miss” Data

Methods of Data Collection

- Automated data recording systems
- Voluntary self-reporting systems

Collection of "Near-Miss" Data

Existing Data Systems

- Aviation
  - Aviation Safety Reporting System (ASRS)
  - Near Midair Collision System (NMACS)
  - The Confidential Human Factors Incident Reporting Programme (CHIRP)
  - The Global Analysis and Information Network (GAIN)

Collection of "Near-Miss" Data

Existing Data Systems

- Maritime
  - **The Nautical Institute International Marine Accident Reporting Scheme (MARS)**
  - **Safety Incident Management Information System (SIMIS)**
  - **The International Maritime Information Safety System (IMISS)**
- Rail
  - **Signal Passed at Danger (SPAD) system**
- Intermodal
  - **Secutitas**

Collection of "Near-Miss" Data

Project Goals & Objectives

- Study Existing Data Systems
- Identify Potential Benefits and Problems
- Explore Transferability of Reporting
- Improve Cross-Modal Utility of Data
- Improve Data Analysis Process

Collection of "Near-Miss" Data

Methodology

- Data Systems Matrix
- Human Factors Taxonomy
- Voluntary Reporting Guidelines
- Automated Methods of Data Collection

Collection of "Near-Miss" Data

Data Systems Matrix

- Background
- Structure
- Program Input
- Data Management
- Program Output

Collection of "Near-Miss" Data

Human Factors Taxonomy

- Purpose
  - Classification of causes
- Elements
  - Level 1 – specific errors
  - Level 2 – predisposing conditions
- Methods
  - Intermodal taxonomy - pilot testing

Collection of "Near-Miss" Data

Key Elements in Voluntary Reporting

- Voluntary participation
- Confidentiality
- Legislative protection & immunity
- Non-regulatory host agency
- Buy-in and support from the community
- Feedback
- Data System Design

Collection of "Near-Miss" Data

Project Approach

- Voluntary Reporting
  - Target areas
  - Modal participation
  - Methods
    - Draft guidelines
    - Pilot testing
    - Final guidelines
    - Modal implementation

Collection of "Near-Miss" Data

Project Approach

- Automated Reporting
  - Technology & Unsafe Situations
  - Advantages of Automated Data Collection
  - Marine Traffic Patterns Study
  - Truck Headway Study

Collection of "Near-Miss" Data

Conclusion

- Value of Unsafe Situation Data in Transportation Safety
- (Self-reports + Recorded Data) = Success
- Identification of Contributing Factors
- Trend Analysis
- New Remediation Strategies